

# **The Causality between Analysts' Recommendations and Corporate M&As**

## **Abstract**

This study examines the role of analysts' recommendations in mergers and acquisitions (M&As), focusing on their impact on payment methods and acquirers' long-term performance. The findings reveal that acquirers with strong buy or buy recommendations are more likely to use 100% stock payment, consistent with the overvaluation hypothesis. Conversely, those with strong sell or sell recommendations tend to prefer cash payment. Notably, acquirers with higher recommendation scores exhibit better long-term market performance, suggesting that analysts' recommendations before M&A announcements do not fully incorporate the deal's potential impact on long-term value creation. Moreover, acquirers with buy recommendations experience significantly lower long-term returns, highlighting the disconnect between analysts' recommendations and long-term performance. These findings contribute to understanding the information content and limitations of analysts' recommendations in the M&A context.

**Keywords:** Mergers and acquisitions, analysts' recommendations, payment methods, Information quality, overvaluation hypothesis

**JEL classification:** G34, G24, G14

## 1. Introduction

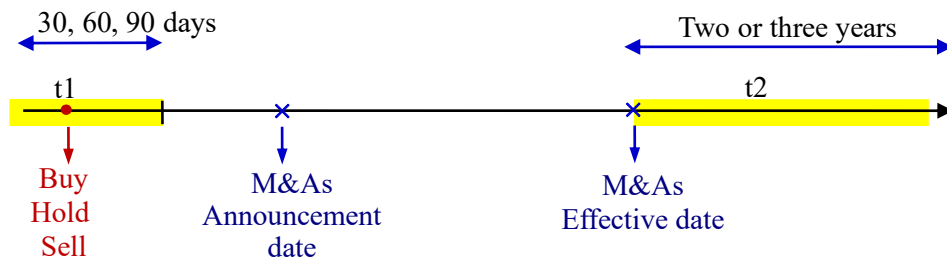
Financial analysts play a pivotal role in the capital markets, with two divergent perspectives about their influence in financial markets. On one hand, analysts are regarded as knowledgeable experts who continuously analyze and disseminate information about a firm's future prospects, acting as information intermediaries and performing crucial monitoring functions. This view implies that analysts rationally analyze and evaluate firms, unaffected by social backgrounds or cognitive biases, leading investors to place substantial weight on their reports. Furthermore, analysts' influence extends to managerial decisions through their monitoring functions, notably in setting earnings targets. Executives often strive to meet or exceed analyst consensus earnings forecasts, which serve as market benchmarks.

Conversely, the behavioral finance perspective posits that analysts are not entirely rational and are susceptible to biases that may affect their judgments. Proponents of this view argue that analysts tend to be overly optimistic in their forecasts, which may be influenced by management strategies, leading to a reciprocal effect on analysts' recommendations. While analysts possess expertise and professional skills to analyze firms within specific industries or related sectors, their ability to provide accurate recommendations or earnings forecasts may be challenged when a firm diversifies or operates across multiple industries. In such cases, corporate strategies could potentially impact the accuracy of analysts' recommendations and forecasts.

This study investigates the causality between analysts' recommendations and corporate merger and acquisition (M&A) strategies, drawing upon the contrasting viewpoints of analysts as rational information intermediaries and analysts as susceptible to cognitive biases. Three research questions are explored, focusing on the causal relationship between analysts' recommendations and managerial decisions in M&As at two distinct time points relative to the deal progression.

The first research question examines whether analysts' recommendations can influence the managerial decision regarding the payment method in M&As. Figure 1 depicts the structure of this study. Specifically, we investigate the period of 30, 60, or 90 days before the M&A announcement ( $t_1$ ). Analysts' recommendations, particularly strong sell ratings, may impact the acquirer's stock performance. When an acquirer's stock price drops substantially following a negative recommendation, managers may be less inclined to complete the deal with stock payment due to undervaluation concerns. Consistent with information asymmetry theories and evidence from Brown and Ryngaert [1], acquirers are more likely to offer stock when their firms are overvalued and cash when undervalued. Consequently, we expect acquirers to proceed with stock

payment when receiving buy or strong buy recommendations before the announcement, potentially indicating overvaluation.



**Figure 1. Two points in time of the progress of M&As**

The second research question explores whether the acquirer's M&A strategy, either focusing on or diversifying operations, can influence analysts' recommendations during t1. Drawing from Litov, Moreton [2], we hypothesize that analysts may be more inclined to follow and provide recommendations for horizontal M&As that align with the acquirer's core operations. Conversely, diversifying M&As poses greater information collection and analysis challenges, potentially discouraging analyst coverage and introducing recommendation biases due to information asymmetry.

Finally, the third research question examines the information content of analysts' recommendations concerning acquirers' long-term performance in the two to three years following the effective date during t2 in Figure 1. Evidence from Becher, Cohn [3] suggest that acquirers with favorable post-merger stock recommendations underperform those with less favorable recommendations. Additionally, Tehranian, Zhao [4] find that continued coverage by target firm analysts positively signals the merged firm's operating and market performance. Building upon these findings, we investigate the information quality of stock recommendations across different M&A strategies, filling a research gap.

The central research question of this study is to analyze the causal relationship between stock recommendations and a firm's expansion strategies in mergers and acquisitions (M&As). Existing evidence presents mixed results, and the primary contribution of this paper is to reconcile these divergent findings by examining the information quality under different types of M&As. Our findings reveal that the interaction between analysts' recommendations and managerial decisions exhibits distinct causality patterns across different stages of the M&A process. This insight can reconcile the contrasting findings concerning the impact of analysts' recommendations on acquirers' announcement returns and long-term performance. The empirical results further enhance our understanding of the causality between analysts' recommendations and acquirers' market performance.

The remainder of this study is as follows. Section 2 reviews the literature on analysts' recommendations in M&As and constructs the research hypotheses. Section 3 details data, variables, and methods. Section 4 presents empirical results and analyzes the interplay between recommendations, decisions, strategies, and performance. Finally, Section 5 synthesizes findings, implications, limitations, and future directions, highlighting contributions.

## **2. Literature review and research hypotheses**

The extant literature underscores the significant influence of analysts' coverage on corporate strategies. Zuckerman [5] finds that firms react to analyst coverage by undertaking divestitures, allowing managers to create a more coherent product identity that facilitates firm valuation by analysts. This evidence suggests that managers consider analyst coverage when making operational decisions. Furthermore, Zuckerman [6] finds that corporations that successfully attract recognition from industry-specialized analysts enjoy greater financial market success, while firms that fail to reduce coverage mismatch trade at a discount. These results highlight the market's significant reaction to analysts' recommendations.

Investors exhibit responsiveness to publicly disseminated analyst recommendations. Ahn, Drake [7] provide evidence that media coverage of analyst recommendation revisions amplifies the initial market reaction and mitigates subsequent price drift, consistent with wider dissemination of analyst reports. Mikhail, Walther [8] find that both large and small traders react to analyst reports, with large investors trading more actively in response to the information conveyed by the analyst's recommendation and earnings forecast revisions. Womack [9] demonstrates that the initial return at the time of recommendations is substantial, with modest and short-lived post-event drift for buy recommendations but larger and more persistent drift for sell recommendations over six months, suggesting analysts possess market timing and stock-picking abilities.

Building on this evidence, we observe that investors react to analyst recommendations, leading to significant stock performance changes in the months following the recommendation. Moreover, managers may consider market reactions when making critical decisions regarding payment methods in mergers and acquisitions (M&As). Brown and Ryngaert [1] find that acquirers who believe their stock is fairly valued or overvalued tend to choose stock payment in M&As, while acquirers who perceive their stock as undervalued prefer cash payment. Collectively, these findings lead us to hypothesize:

**Hypothesis 1:** Acquirers are more likely to use stock payment after receiving a buy or strong buy recommendation but cash payment after receiving a sell or strong sell recommendation.

Analysts typically follow the same set of firms within a specific industry due to the costly nature of information collection and industry-related analysis. However, target firms may be delisted after mergers and acquisitions (M&As), leaving acquirers as the remaining listed entities. The existing literature suggests that analysts may not continue following acquirers due to their unique strategies. For instance, Litov, Moreton [2] argue that analysts need to expend more effort in assessing the earnings prospects of firms with diversified portfolios. Consequently, diversified firms within an industry tend to have lower analyst coverage compared to their more focused industry competitors. Therefore, we expect analyst coverage to decrease after M&As, especially in the case of diversified M&A transactions.

Furthermore, information quality may become a concern after M&As, as analysts need to exert more effort to understand the potential synergies involved. Feldman [10], in their analysis of spin-off events, theorizes that only analysts who provide explicit details on the particular business unit before the spin-off demonstrate greater accuracy in their post-spin-off earnings forecasts for that business. This evidence implies that analysts may not fully comprehend how to evaluate diversified firms, as indicated by their inability to provide accurate earnings forecasts for the firm and its spin-off. Additionally, Nicolai, Schulz [11] show that firm refocusing is associated with a systematic positive bias in analysts' future earnings forecasts during the 1990s. Based on these findings, we expect a decline in the information quality of analyst recommendations after M&As. Further, analysts following merged firms may provide positively biased recommendations in the case of refocusing M&As.

**Hypothesis 2:** Firms that conduct diversified M&As are likely to experience a reduction in analyst coverage, and on average, their recommendations tend to be systematically negatively biased.

Analysts constitute a legitimate authority due to their perceived expertise, independence, and the wide dissemination of professional reports about firms [6, 12-14]. However, information quality remains a major concern in the market. Extensive literature focuses on this issue, with some researchers utilizing mergers and acquisitions (M&As) as a context for analysis. For instance, Tehranian, Zhao [4] find that analysts' post-merger coverage decisions may reveal valuable information about a merged firm's future performance. They show that a larger proportion of target firm analysts choosing to continue coverage of the merged firm is positively associated with better performance of the merged entity.

However, the evidence within this research stream has some conflicting findings. Becher, Cohn [3] examine the role of analyst recommendations on the post-merger performance of acquiring and target firms, using more than 5,000 merger announcements. Surprisingly, they find that acquirers with favorable post-merger stock recommendations underperform acquiring firms with less favorable post-merger recommendations in the two years after M&As. We suspect that one reason for these inconsistent results is the information quality of analyst recommendations. In conjunction with the previous hypothesis, we test the information quality concerning different types of M&As to find evidence that may reconcile these conflicting empirical findings.

The information quality of analyst recommendations may vary across different types of M&As. Following this rationale, we test the explanatory power of analyst recommendations on acquirers' long-term market performance. Shen, Tang [15] find that the relative status of acquirer and target firms is likely to influence how investors respond. The authors measure the differential in acquirer–target status by the difference in analyst coverage between the two firms and show that a greater differential in acquirer–target status predicts better post-merger performance. However, we test the information content of analysts' recommendations by examining the explanatory power of the recommendation itself on the acquirers' long-term market performance after M&As. The expected result is that the information content of analysts' recommendations before M&As relies on short-term news or forecasts, which is not directly related to the synergies of M&As. Additionally, analysts' recommendations before M&As may result in the agency problem of overvalued equity, which may have a negative impact on acquirers' long-term performance after M&As. Therefore, our third research hypothesis is as follows:

**Hypothesis 3:** The explanatory power of analyst recommendations might be inconsistent with acquirers' long-term performance after M&As. In contrast, the agency problem of overvalued equity due to analysts' recommendations may result in poor performance.

### **3. Methodology and data collection**

#### **3.1. The types of M&As**

The primary data source for this study is the Securities Data Corporation's (SDC) US Mergers and Acquisitions Database, which encompasses all completed merger and acquisition (M&A) transactions. The sample period spans from 2000 to 2017, and we

trace the acquirer firms' stock returns up to 2020. The final dataset comprises domestic acquisitions involving U.S. acquirers, as this allows for the tracking of analyst coverage.

To construct the sample, we apply the following selection criteria:

- (1) Deal Type and Asset Class: We include only M&A transactions involving the common stocks of publicly traded firms listed on the American Express (AMEX), New York Stock Exchange (NYSE), or NASDAQ exchanges. We exclude real estate investment trusts (REITs), American depository receipts (ADRs), closed-end mutual funds, and partnerships.
- (2) Transaction Classification and Payment Method: The transactions must be classified as either a merger or an acquisition of a majority interest, with clear information on the method of payment used in the deal.
- (3) Acquirer Industry Exclusions: We exclude transactions where the acquirer operates in the financial (Standard Industrial Classification (SIC) codes 6000-6999) or utility (SIC codes 4900-4999) sectors to mitigate potential industry-specific effects.
- (4) Deal Size and Acquirer Market Capitalization: Following Uysal, Kedia [16], we exclude transactions valued at less than \$5 million and those involving acquirers with a market capitalization below \$5 million to ensure economic significance and mitigate potential biases arising from small transactions or acquirers.
- (5) Multiple Acquisitions: To avoid confounding effects, we exclude acquirer firms that engaged in multiple M&A transactions within two years after the first acquisition. In such cases, we retain only the last M&A transaction that does not have any subsequent acquisitions within the two-year window.

By adhering to these rigorous selection criteria, we construct a comprehensive and robust dataset that enables us to investigate our research questions effectively while maintaining data integrity and representativeness.

We employ the buy-and-hold abnormal return (BHAR) methodology to measure long-term performance. Daily stock returns and shares outstanding data for the sample firms are obtained from the Center for Research in Security Prices (CRSP) database. Annual accounting data, including firm characteristics such as total assets, long-term debt, sales, and operating income, are sourced from the Compustat database.

Analyst recommendation data spanning the period from 2000 to 2017 are retrieved from the Zacks Investment Research database. We focus exclusively on recommendations pertaining to common stock equities, excluding other asset classes such as exchange-traded funds (ETFs) or American Depository Receipts (ADRs). The recommendation data encompass several metrics, including the number of distinct

recommendation types, the arithmetic mean of recommendations, and the number of analysts providing coverage.

Analyst recommendations are denoted by the symbol "S," which ranges from 1 to 5, with 1 representing the most favorable recommendation (strong buy) and 5 representing the most unfavorable recommendation (strong sell). Specifically, the rating scale is as follows: 1 = strong buy, 2 = buy, 3 = hold, 4 = sell, and 5 = strong sell.

To examine the impact of diversification on M&A performance, we categorize our sample into two types: diversified M&As and horizontal M&As. The industry classification is based on the four-digit Standard Industrial Classification (SIC) code, which represents the primary line of business for each firm. A transaction is classified as a horizontal M&A if the acquirer and target firms operate in the same four-digit SIC industry. Conversely, a diversified M&A involves acquirer and target firms from different four-digit SIC industries, implying that the two firms operate in fundamentally distinct business sectors.

By leveraging these data sources and employing a robust industry classification scheme, we construct a comprehensive dataset that enables us to rigorously investigate the research questions while maintaining methodological soundness and data integrity.

### 3.2. Performance Measures

Buy-and-hold abnormal returns are calculated as follows:

$$BHARS_p = \frac{1}{N} \sum_{j=1}^N \left[ \prod_{t=1}^T (1 + R_{j,t}) - \prod_{t=1}^T (1 + R_{bench,t}) \right], \quad (1)$$

where  $R_{j,t}$  and  $R_{bench,t}$  respectively, denote firm  $j$ 's returns and benchmark returns on day  $t$ , and  $N$  is the number of firms. We calculate the return from the effective date and set a year to have 252 trading days. If the firm is delisted, returns compound until the delisting date.

The event-time methodology has been criticized for overstating issuers' long-run underperformance [17, 18]. To overcome this defect, we use the Fama and French [19] model plus price momentum (i.e., the four-factor model) to conduct time-series regressions, which can be written as

$$R_{p,t} - R_{f,t} = \alpha_{j,T} + \beta_1 RMRF_t + \beta_2 SMB_t + \beta_3 HML_t + \beta_4 Momentum_t + \varepsilon_t, \quad (2)$$

where  $R_{p,t}$  is return on the (equally weighted) portfolio,  $R_{f,t}$  is risk-free rate,  $RMRF_t$  is market return minus risk-free rate,  $SMB_t$  is return on a portfolio of small firms minus return on a portfolio of large firms,  $HML_t$  is return on a portfolio of high book-to-market (BM) firms minus return on a portfolio of low BM firms,  $Momentum$  is return on a portfolio of good performers minus return on a portfolio of poor performers, and



subscript  $t$  indicates month  $t$ . Empirically, we only report the intercept of eq. (2), which is a measure of monthly abnormal performance.

### 3.3. Empirical models

This study aims to test three research hypotheses, for which we design two empirical models. First, to examine the impact of analyst recommendations on the choice of payment methods in M&A transactions, we employ a logistic regression framework. The dependent variables in this model are two dummy variables representing the payment methods:  $D^{\text{cash}}$  and  $D^{\text{stock}}$ .  $D^{\text{cash}}$  is a binary variable that takes the value of 1 if the acquirer uses 100% cash as the payment method in the M&A transaction and 0 otherwise. Conversely,  $D^{\text{stock}}$  is a binary variable that takes the value of 1 if the acquirer uses 100% stock as the payment method and 0 otherwise.

The logistic regression model allows us to estimate the probability of an acquirer choosing a particular payment method (cash or stock) as a function of various explanatory variables, including analyst recommendations and other relevant control variables. The model specification is as follows:

$$\begin{aligned}
 D_{i,t}^{\text{cash}}, D_{i,t}^{\text{stock}} = & \alpha_0 + \beta_1 \text{Strong buy}_{i,t-1} + \beta_2 \text{Buy}_{i,t-1} + \beta_3 \text{Hold}_{i,t-1} + \beta_4 \text{Sell}_{i,t-1} \\
 & + \beta_5 \text{Strong sell}_{i,t-1} + \beta_6 \text{Size}_{i,t-1} + \beta_7 \text{BM}_{i,t-1} + \beta_8 \text{ROA}_{i,t-1} \\
 & + \beta_9 \text{DPR}_{i,t-1} + \beta_{10} \text{Liquid}_{i,t-1} + \beta_{11} \text{DR}_{i,t-1} + \beta_{12} \text{Runup}_{i,t-1} \\
 & + \sum_j \beta_j \text{Year Dummies} + \sum_k \beta_k \text{Industry Dummies}, \quad (3)
 \end{aligned}$$

the key independent variables are the number of analysts' recommendations categorized as strong buy, buy, hold, sell, and strong sell. Additionally, we include several control variables that may influence the choice of payment method in M&A transactions, such as firm size (Size), book-to-market ratio (BM), return on assets (ROA), dividend payout ratio (DPR), liquidity ratio (Liquid), debt ratio (DR), and three-month abnormal return before the announcement date (Runup). Furthermore, we incorporate annual and industry dummy variables to account for potential time and sector-specific effects.

Secondly, to assess the information quality of analyst recommendations concerning different types of M&A transactions, we examine their explanatory power in predicting the acquirer's long-term performance. The dependent variable is the three-year buy-and-hold abnormal return (BHAR), and the key independent variables are the number of analysts' recommendations categorized as strong buy, buy, hold, sell, and strong sell.

In addition, we control for various factors that could influence the acquirer's long-term performance following the M&A, including firm size (Size), book-to-market ratio (BM), return on assets (ROA), dividend payout ratio (DPR), liquidity ratio (Liquid),

debt ratio (DR), three-month abnormal return before the announcement date (Runup), and a dummy variable indicating whether the transaction is a horizontal M&A (Horizon).

Moreover, we incorporate the payment method variables,  $D^{\text{cash}}$  and  $D^{\text{stock}}$ , to account for the potential impact of the chosen payment method on long-term performance.  $D^{\text{cash}}$  is a binary variable that takes the value of 1 if the acquirer uses 100% cash as the payment method and 0 otherwise, while  $D^{\text{stock}}$  is a binary variable that takes the value of 1 if the acquirer uses 100% stock as the payment method and 0 otherwise. Finally, we include annual and industry dummy variables to control for potential time and sector-specific effects.

By employing these empirical models and controlling for relevant factors, we aim to provide robust insights into the influence of analyst recommendations on the choice of payment methods in M&A transactions and their ability to predict the acquirer's long-term performance following different types of M&A transactions. The empirical model is as follows:

$$\begin{aligned}
BHAR_{i,t+3} = & \alpha_0 + \beta_1 Strong\ buy_{i,t-1} + \beta_2 Buy_{i,t-1} + \beta_3 Hold_{i,t-1} + \beta_4 Sell_{i,t-1} \\
& + \beta_5 Strong\ sell_{i,t-1} + \beta_6 Size_{i,t-1} + \beta_7 BM_{i,t-1} + \beta_8 ROA_{i,t-1} \\
& + \beta_9 DPR_{i,t-1} + \beta_{10} Liquid_{i,t-1} + \beta_{11} DR_{i,t-1} + \beta_{12} Runup_{i,t-1} \\
& + \beta_{13} Horizon_{i,t-1} + \beta_{14} D^{\text{cash}} + \beta_{15} D^{\text{stock}} + \sum_j \beta_j Year\ Dummies \\
& + \sum_k \beta_k Industry\ Dummies, \tag{4}
\end{aligned}$$

## 4. Empirical results

### 4.1. Summary of data characteristics

To gain insights into the sample characteristics, we first examine the distribution of M&A transactions across different years, as presented in Table 1. The data reveals a notable surge in M&A activity during the 2000 internet bubble period, followed by a substantial decline in the aftermath of the 2008 financial crisis. This observation highlights the sensitivity of M&A activity to market conditions and economic shocks.

Interestingly, the choice of payment method in M&A transactions also exhibits significant variation across different periods. During the internet bubble period, acquirers more frequently opted for 100% stock payments, potentially driven by the overvaluation of their stocks. However, in the post-financial crisis era, the preferred payment method shifted toward 100% cash payments, possibly in response to the undervaluation of acquirer stocks during that period.

The observed patterns in M&A activity and payment method preferences underscore the dynamic nature of these transactions and their susceptibility to prevailing market conditions and valuation trends. Acquirers' strategic decisions regarding payment methods appear to be influenced by the perceived over- or undervaluation of their stocks, reflecting the intricate interplay between market sentiment, firm valuation, and M&A execution.

**Table 1. The Distribution of the Sample**

This table summarizes the number of M&A firms by year and the payment methods, respectively. Payment methods are 100% cash, 100% stock payment, or mixed payment. The data range is from 2000 to 2017.

Year	Cash	Stock	Mix	Sum
2000	57	74	16	151
2001	36	44	11	92
2002	20	22	12	57
2003	32	21	10	66
2004	30	16	16	63
2005	41	12	22	77
2006	51	18	9	82
2007	47	7	14	69
2008	30	4	7	43
2009	21	10	9	43
2010	34	7	9	53
2011	15	2	7	26
2012	34	3	7	50
2013	27	3	2	37
2014	24	7	12	49
2015	31	10	21	67
2016	33	3	10	50
2017	20	3	5	31
Sum	583	266	199	1106

Secondly, we present the summary statistics of all empirical variables in Table 2, which provide insights into the characteristics of the acquiring firms in our sample. The firm size, measured by the natural logarithm of market capitalization, exhibits a normal distribution. The mean and median values are closely aligned, and the tail distribution is smooth, indicating a well-behaved distribution.

Interestingly, the book-to-market ratio of acquiring firms is generally below one, as evidenced by the mean, median, and the 10th and 90th percentile values. This finding suggests that more than 80% of the acquiring firms in our sample are likely to be growth

firms, which may partially explain their motivation to expand operations through M&A activities.

Turning to profitability measures, the sample firms exhibit positive earnings before undertaking acquisitions. Specifically, the first quartile (Q1) of return on assets (ROA) is 0.4%, implying that more than 75% of acquirers have positive accounting earnings. This observation underscores the financial strength and operational performance of the acquiring firms prior to engaging in M&A transactions.

Regarding capital structure, more than 50% of the sample firms have a debt ratio exceeding 0.5, indicating a substantial reliance on financial leverage. This finding highlights the importance of considering leverage in the analysis of M&A transactions and their potential impact on firm performance.

Finally, the mean values of the stock and cash payment dummies reveal that a higher proportion of acquirers in our sample opted for 100% cash payments in M&A transactions. This observation is consistent with the sample distribution presented in Table 1 and may reflect the prevailing market conditions and valuation trends during the sample period.

Overall, the summary statistics provide valuable insights into the characteristics of the acquiring firms, including their size, growth prospects, profitability, leverage, and preferred payment methods. These findings lay the foundation for further analysis and assist in interpreting the empirical results in the context of the sample's unique features.

## Table 2. Summary Statistics

This table shows the summary statistics of empirical variables for all sample firms. Size is the log of market capital, BM is the ratio of book to market value, ROA is return on assets, Runup is the three-month buy-and-hold abnormal return before M&A announcement date, Dividend is the payout ratio, CR is the current ratio, Leverage is the debt ratio, Stock is 100% stock payment in M&As, Cash is 100% cash payment in M&As, and Mix is the mixed payment.

Variables	Mean	Median	STD	Q1	Q3	P10	P90	Min	Max
Size	2.107	2.127	0.233	1.962	2.274	1.806	2.410	1.333	2.591
BM	0.401	0.361	0.995	0.209	0.534	0.112	0.824	-21.915	6.959
ROA	0.015	0.047	0.169	0.004	0.083	-0.113	0.124	-1.927	0.282
Runup	-0.039	-0.030	0.195	-0.125	0.066	-0.249	0.175	-1.039	0.685
Dividend	0.014	0.000	0.544	0.000	0.042	0.000	0.105	-10.962	4.854
CR	0.120	0.083	0.116	0.035	0.164	0.015	0.283	0.000	0.760
Leverage	0.507	0.507	0.235	0.353	0.642	0.200	0.777	0.021	2.346
Stock	0.255	0.000	0.436	0.000	1.000	0.000	1.000	0.000	1.000
Cash	0.551	1.000	0.498	0.000	1.000	0.000	1.000	0.000	1.000
Mix	0.194	0.000	0.396	0.000	0.000	0.000	1.000	0.000	1.000

Thirdly, we examine the correlation matrix among all empirical variables, presented in Table 3, for two primary reasons. On one hand, this analysis allows us to uncover simple relationships among variables, facilitating the interpretation of univariate analyses. On the other hand, it serves as a crucial diagnostic step preceding multivariate regression analyses, enabling us to identify and mitigate potential multicollinearity concerns. We summarize the correlation coefficients in Table 3.

**Table 3. Correlation Matrix**

This table shows the correlation matrix of empirical variables for all sample firms. Size is the log of market capital, BM is the ratio of book to market value, ROA is return on assets, Runup is the three-month buy-and-hold abnormal return before M&A announcement date, Dividend is the payout ratio, CR is the current ratio, Leverage is the debt ratio, Stock is 100% stock payment in M&As, Cash is 100% cash payment in M&As, and Mix is the mixed payment.

	Size	BM	ROA	Runup	Dividend	CR	Leverage	Stock	Cash	Mix
Size	1	-0.092	0.425	0.005	0.020	-0.283	0.147	-0.175	0.248	-0.119
		0.019	<.001	0.892	0.617	<.001	<.001	<.001	<.001	0.003
BM		1	0.302	-0.036	0.008	-0.049	-0.306	-0.014	-0.029	0.052
			<.001	0.366	0.848	0.214	<.001	0.720	0.460	0.185
ROA			1	-0.027	0.022	-0.205	-0.037	-0.292	0.233	0.028
				0.498	0.571	<.001	0.352	<.001	<.001	0.478
Runup				1	-0.012	0.066	0.040	-0.018	0.040	-0.031
					0.765	0.093	0.319	0.653	0.307	0.431
Dividend					1	-0.016	-0.063	0.027	0.044	-0.085
						0.678	0.117	0.496	0.269	0.032
CR						1	-0.196	0.070	-0.043	-0.023
							<.001	0.078	0.277	0.565
Leverage							1	-0.189	0.171	-0.006
								<.001	<.001	0.872
Stock								1	-0.648	-0.287
									<.001	<.001
Cash									1	-0.544
										<.001
Mix										1

An examination of the correlation matrix in Table 3 reveals that only two correlation coefficients exceed the threshold of 0.5 in absolute value. These coefficients pertain to the relationships among the payment method variables, specifically between stock and cash payment, and between cash and mixed payment. This observation is consistent with the inherent nature of payment methods, which are mutually exclusive categories.

Given that a single transaction can only employ one payment method, the presence of negative correlations among these variables is expected. Specifically, the correlation coefficient between 100% cash and 100% stock payments is -0.648, indicating a moderately strong negative relationship. Similarly, the correlation between 100% cash and mixed payments exhibits a negative coefficient of -0.544.

These negative correlations are logical and stem from the fact that the payment methods cannot co-occur within a single transaction. For instance, if an acquirer opts for a 100% cash payment, it precludes the use of either a 100% stock or a mixed

payment method. Consequently, the payment method variables are inherently negatively correlated, reflecting their mutually exclusive nature.

#### **4.2. The impact of the recommendation on the method of payment**

Stock analysts possess diverse information sources, and their final recommendations can significantly influence market reactions to the stocks they cover. Empirical evidence supports the argument that analysts' recommendations can affect managerial decisions in mergers and acquisitions (M&As), particularly regarding the choice of payment method. The underlying rationale is rooted in the potential overvaluation of stocks when analysts issue strong buy recommendations. In such scenarios, acquiring firms' managers may have an incentive to utilize their overvalued stocks as a form of payment for M&A transactions. This agency problem arising from overvalued equity has been extensively discussed by Jensen [20].

Building upon this conceptual framework, we test whether analysts' recommendations influence managerial decisions on the choice of payment method in M&A transactions. To this end, we first summarize the number of analyst recommendations in the 30-day, 60-day, and 90-day periods preceding the M&A announcements, categorized by the respective payment methods employed, as presented in Table 4.

The analysis of analyst recommendations in the run-up to M&A announcements holds significant implications for understanding the potential drivers of payment method decisions. By examining the relationship between analyst recommendations and payment method choices, we aim to uncover empirical evidence supporting or refuting the hypothesis that overvalued equity, as signaled by strong buy recommendations, incentivizes managers to employ stock as a form of payment in M&A transactions.

Panel A in Table 4 reveals that more than double the number of acquirers opt for 100% cash payments compared to 100% stock payments, and more than triple the number of acquirers choose cash payments over mixed payments. Notably, acquiring firms using 100% stock payments have higher average strong buy and buy recommendations than those using cash payments. Specifically, in the case of strong buy recommendations, stock-paying acquirers have an average of 1.316 such recommendations, while cash-paying acquirers have an average of 0.815. Similarly, for buy recommendations, stock-paying acquirers have an average of 1.453, compared to 1.155 for cash-paying acquirers.

Based on this evidence, we can conclude that acquiring firms with strong buy or buy recommendations are more likely to use 100% stock payments than cash payments, potentially due to the perceived overvaluation of their stocks. The findings within the

60-day and 90-day windows, presented in Panels B and C, are consistent with the 30-day window, reinforcing the robustness of this observation.

This finding provides supportive evidence for the first research hypothesis, which posits that analyst recommendations influence the choice of payment method in M&A transactions. Conversely, the recommendations of strong sell or sell show that acquiring firms with more negative recommendations are more likely to pay 100% in cash, although the number of firms with negative recommendations is relatively small. This evidence further corroborates the argument that acquiring firms are reluctant to pay with stock when their stocks are perceived as undervalued due to negative recommendations.

It is noteworthy that analysts generally issue more positive recommendations than negative ones in our sample. However, both types of recommendations lend support to the first research hypothesis, suggesting that analysts' assessments of firm valuation, as reflected in their recommendations, play a significant role in shaping managerial decisions regarding the payment method in M&A transactions.

**Table 4. The number of analysts with respect to the method of payment**

The table reports the numbers of analysts' recommendations, strong buy, buy, hold, sell, and strong sell with respect to different methods of payment. The average number of recommendations is provided below the number of recommendations. Panel A, B, and C are the 30, 60, and 90 days windows before the announcement of M&As respectively.

Panel A: 30 days before the announcement						
Payment	No. Firm	Strong Buy	Buy	Hold	Sell	Strong Sell
Cash	271	221	313	436	24	53
		0.815	1.155	1.609	0.089	0.196
Stock	117	154	170	155	7	18
		1.316	1.453	1.325	0.060	0.154
Mix	90	88	114	117	6	16
		0.978	1.267	1.300	0.067	0.178
Panel B: 60 days before the announcement						
Payment	No. Firm	Strong Buy	Buy	Hold	Sell	Strong Sell
Cash	371	257	410	557	31	65
		0.693	1.105	1.501	0.084	0.175
Stock	162	191	220	181	9	21
		1.179	1.358	1.117	0.056	0.130
Mix	130	104	148	160	7	16
		0.800	1.138	1.231	0.054	0.123
Panel C: 90 days before the announcement						
Payment	No. Firm	Strong Buy	Buy	Hold	Sell	Strong Sell
Cash	413	272	430	586	31	70
		0.659	1.041	1.419	0.075	0.169
Stock	183	198	229	193	10	23
		1.082	1.251	1.055	0.055	0.126
Mix	148	107	155	174	8	17
		0.723	1.047	1.176	0.054	0.115

Next, we examine the relationship between analyst recommendations and the types of M&A transactions. Due to data availability constraints, we classify the acquiring firms into two categories: horizontal M&As and diversified M&As. Horizontal M&As are defined as transactions where the acquirer and target firms share the same four-digit Standard Industrial Classification (SIC) code, indicating that they operate within the same industry. Conversely, diversified M&As involve acquirer and target firms with different four-digit SIC codes, implying that they operate in distinct industries. Based on this classification, we summarize the analyst recommendations for each type of M&A in Table 5.

This analysis aims to explore whether analyst recommendations exhibit any discernible patterns or variations across horizontal and diversified M&A transactions.



By disaggregating the recommendations based on the degree of industry relatedness between the acquirer and target firms, we can gain valuable insights into the potential influence of industry factors on analyst assessments and recommendations.

**Table 5. The recommendation with respect to the type of M&A**

The table reports the numbers of analysts' recommendations, strong buy, buy, hold, sell, and strong sell with respect to different type of M&As. The average number of recommendations is provided below the number of recommendations. Panel A, B, and C are the 30, 60, and 90 days windows before the announcement of M&As respectively.

Panel A. 30 days before the announcement of M&As						
	No. Firm	Strong buy	Buy	Hold	Sell	Strong sell
Diversified M&A	256	250	339	363	20	40
		0.98	1.32	1.42	0.08	0.16
Horizontal M&A	187	182	226	295	15	43
		0.97	1.21	1.58	0.08	0.23
Panel A. 60 days before the announcement of M&As						
	No. Firm	Strong buy	Buy	Hold	Sell	Strong sell
Diversified M&A	349	293	444	464	27	47
		0.84	1.27	1.33	0.08	0.13
Horizontal M&A	260	219	285	359	17	49
		0.84	1.10	1.38	0.07	0.19
Panel A. 90 days before the announcement of M&As						
	No. Firm	Strong buy	Buy	Hold	Sell	Strong sell
Diversified M&A	392	307	464	489	28	49
		0.78	1.18	1.25	0.07	0.13
Horizontal M&A	291	229	300	383	17	55
		0.79	1.03	1.32	0.06	0.19

An examination of all panels in Table 5 reveals that the number of horizontal M&As is lower than that of diversified M&As in our sample. By comparing the average numbers across all types of recommendations, we find no significant differences between horizontal and diversified M&As. However, it is noteworthy that diversified M&As tend to receive more buy recommendations on average than horizontal M&As, as evident in Panels A, B, and C. Nonetheless, these differences are not statistically significant enough to draw systematic conclusions about the relationship between analyst recommendations and the types of M&A transactions.

Furthermore, our analysis shows that horizontal M&As receive more strong sell recommendations on average compared to diversified M&As. However, based on the cumulative results presented in Table 5, we cannot find compelling evidence to support the second research hypothesis, which posits a relationship between analyst recommendations and the types of M&A transactions (horizontal versus diversified).

The absence of significant differences in analyst recommendations between horizontal and diversified M&As suggests that analysts may not perceive a substantial distinction in terms of the potential value creation or risk profiles associated with these two types of transactions. Alternatively, it is possible that analysts' industry expertise and familiarity with the acquirer's core business do not significantly influence their recommendations in the context of M&A transactions.

It is important to acknowledge that our findings do not preclude the existence of other factors or considerations that may shape analyst recommendations for M&A transactions. Additionally, the lack of supportive evidence for the second research hypothesis does not diminish the relevance of investigating the relationship between analyst recommendations and M&A types. Further research and analysis may be warranted to explore this relationship in greater depth, potentially incorporating additional variables or employing alternative methodological approaches.

Ultimately, while our current analysis does not yield conclusive evidence regarding the influence of M&A types on analyst recommendations, it provides valuable insights and lays the foundation for future research endeavors in this area.

### **4.3. The information content of analysts' recommendations**

Analysts' recommendations are intended to encapsulate various information sources, and many investors rely on these recommendations to guide their investment decisions. This section aims to test the information content of analysts' recommendations concerning the long-term market performance of acquiring firms. We employ the two-year and three-year buy-and-hold abnormal returns (BHARs) as measures of long-term market performance. Additionally, we compute a recommendation score to classify the different types of recommendations. The recommendation score is a weighted average of all recommendations for a firm, with weights assigned as follows: 1 for strong buy, 2 for buy, 3 for hold, 4 for sell, and 5 for strong sell recommendations. Consequently, a higher recommendation score indicates a more negative overall recommendation. Based on these scores, we classify all acquirers into three groups: low, medium, and high scores, and summarize the two-year and three-year BHARs for each group in Table 6.

From Panel A in Table 6, we observe that acquiring firms with higher recommendation scores exhibit better BHARs than those with lower scores, both in the two-year and three-year periods. This pattern is consistent across the mean and median values of BHARs for different recommendation score groups. This finding implies that acquirers have better long-term market performance when they receive negative recommendations before announcing M&A transactions. The result suggests that the information content of analysts' recommendations prior to M&A announcements does

not fully incorporate the potential implications of the transactions themselves. Instead, analysts' recommendations might be based on short-term information or news rather than long-term perspectives. The results in Panels B and C corroborate the evidence presented in Panel A, further reinforcing the observed relationship between higher (more negative) recommendation scores and better long-term market performance for acquiring firms.

These findings raise important questions about the ability of analysts' recommendations to reflect the long-term implications of M&A transactions accurately. While analysts' recommendations may incorporate short-term information and market sentiment, they appear to overlook or underestimate the potential long-term effects of M&A activities on acquirer performance. This disconnect between analysts' recommendations and long-term market performance underscores the need for a more comprehensive and forward-looking approach to evaluating the consequences of M&A transactions.

**Table 6. BHAR after M&A**

The table reports the mean and median of two-year and three-year buy-and-hold abnormal returns (BHARs) with respect to different recommendation scores. The recommendation score is the weighted average of all recommendations of a firm and the weight is 1 for strong buy, 2 for buy, 3 for hold, 4 for sell, and 5 for strong sell recommendations. We classify the recommendation scores into three groups: low, medium, and high. Panel A, B, and C are the 30, 60, and 90 days windows before the announcement of M&As respectively.

Panel A. Recommendation 30 days before M&As						
Recommendation score	Two years			Three years		
	Low	Medium	High	Low	Medium	High
Mean	-0.386	-0.141	-0.114	-0.576	-0.237	-0.153
Median	-0.429	-0.148	-0.129	-0.686	-0.201	-0.182
Panel B. Recommendation 60 days before M&As						
Recommendation score	Low	Medium	High	Low	Medium	High
	Mean	-0.396	-0.150	-0.120	-0.616	-0.242
Median	-0.443	-0.149	-0.138	-0.721	-0.228	-0.181
Panel C. Recommendation 90 days before M&As						
Recommendation score	Low	Medium	High	Low	Medium	High
	Mean	-0.369	-0.150	-0.120	-0.579	-0.248
Median	-0.428	-0.148	-0.141	-0.705	-0.242	-0.186

The univariate analysis presented above provides supportive evidence for the third research hypothesis. Next, we test the previous research hypotheses within a multivariate framework. The empirical results of equation (3) are presented in Tables 7 and 8. Based on the dummy variable representing 100% cash payment, we include the

regressions of analysts' recommendations in the 30-day, 60-day, and 90-day windows prior to the M&A announcements in Table 7.

From Table 7, we find that the strong buy recommendations have a significant negative impact on the likelihood of cash payment at the 10% significance level in the 30-day and 60-day windows. This finding is consistent with the evidence from the univariate analysis in Table 4. The strong buy recommendations from analysts might drive stock prices upward or even lead to overvaluation. Consequently, acquirers may take advantage of their overvalued stocks to merge or acquire other firms by using stock as a form of payment.

Additionally, firm size emerges as a positive driver for cash payment, implying that larger firms are more likely to utilize cash as the payment method in M&A transactions. This observation aligns with the notion that larger firms tend to have greater financial resources and access to capital, enabling them to fund acquisitions through cash payments more readily.

The multivariate analysis reinforces the findings from the univariate analysis, providing further support for the hypothesis that analysts' recommendations, particularly strong buy recommendations, influence the choice of payment method in M&A transactions. Specifically, strong buy recommendations are associated with a lower likelihood of cash payment, suggesting that acquirers may exploit the perceived overvaluation of their stocks and employ stock-based payments.

Furthermore, the positive relationship between firm size and cash payment highlights the importance of considering firm characteristics and financial resources in analyzing payment method decisions. Larger firms, with their greater financial flexibility, appear to have a propensity for utilizing cash payments, potentially due to their ability to access capital markets and generate sufficient cash flows to fund acquisitions.

These findings contribute to a deeper understanding of the factors driving payment method decisions in M&A transactions and underscore the interplay between analyst recommendations, firm valuation, and financial resources in shaping these strategic corporate decisions.

**Table 7. The logistic regression of the cash-only payment**

The dependent variable is  $D^{\text{cash}}$ , which equals to 1 when the acquirer uses 100% cash payment in the M&A and 0 otherwise. The key independent variables are the numbers of analysts' recommendations: Strong buy, Buy, Hold, Sell, and Strong sell. The rest of the independent variables that may have a certain impact on the method of payment in M&As, are firm size (Size), book-to-market ratio (BM), return on assets (ROA), dividend payout ratio (DPR), liquidity ratio (Liquid), debt ratio (DR), and three-month abnormal return before announcement date (Runup). In addition, we also control for annual and industrial dummies.

Variables	30 days	60 days	90 days
Strong buy	-0.271* (0.071)	-0.248* (0.053)	-0.188 (0.145)
Buy	-0.101 (0.399)	-0.099 (0.347)	-0.126 (0.208)
Hold	0.160 (0.180)	0.121 (0.199)	0.078 (0.370)
Sell	-0.188 (0.672)	-0.412 (0.234)	-0.475 (0.175)
Strong sell	-0.110 (0.755)	-0.160 (0.595)	-0.094 (0.759)
Size	2.801*** (0.004)	2.030** (0.010)	2.362*** (0.001)
BM	-0.832 (0.210)	-0.695 (0.196)	-0.662 (0.163)
ROA	1.787 (0.162)	1.188 (0.269)	1.203 (0.255)
DPR	0.126 (0.715)	0.221 (0.128)	0.262* (0.098)
Liquid	3.044* (0.073)	1.311 (0.353)	2.215* (0.094)
DR	1.272 (0.114)	0.701 (0.281)	0.958 (0.142)
Runup	-0.096 (0.915)	0.279 (0.695)	0.652 (0.354)
Constant	-5.815*** (0.010)	-3.922** (0.035)	-4.895*** (0.004)
Pseudo R <sup>2</sup>	0.171	0.134	0.139

**Table 8. The logistic regression of the stock only payment**

The dependent variable is  $D^{\text{stock}}$ , which equals 1 when the acquirer uses 100% stock payment in the M&A and 0 otherwise. The key independent variables are the numbers of analysts' recommendations: Strong Buy, Buy, Hold, Sell, and Strong sell. The rest of the independent variables that may have a certain impact on the method of payment in M&As, are firm size (Size), book-to-market ratio (BM), return on assets (ROA), dividend payout ratio (DPR), liquidity ratio (Liquid), debt ratio (DR), and three-month abnormal return before announcement date (Runup). In addition, we also control for annual and industrial dummies.

Variables	30 days	60 days	90 days
Strong buy	0.322* (0.092)	0.329* (0.053)	0.289 (0.109)
Buy	-0.066 (0.670)	-0.033 (0.817)	-0.040 (0.765)
Hold	-0.002 (0.986)	-0.054 (0.662)	-0.046 (0.705)
Sell	-0.143 (0.777)	0.291 (0.517)	0.388 (0.387)
Strong sell	0.648 (0.140)	0.908** (0.017)	0.813** (0.031)
Size	-0.699 (0.629)	-1.461 (0.242)	-1.230 (0.277)
BM	-0.494 (0.630)	-0.398 (0.669)	0.416 (0.570)
ROA	-4.313** (0.011)	-3.615*** (0.008)	-3.804*** (0.006)
DPR	0.102 (0.815)	0.558 (0.141)	0.474 (0.216)
Liquid	-2.681 (0.188)	-2.785 (0.109)	-2.909* (0.072)
DR	-2.339** (0.043)	-1.133 (0.179)	-1.286 (0.142)
Runup	2.087* (0.099)	1.102 (0.238)	0.334 (0.712)
Constant	2.235 (0.485)	2.899 (0.295)	2.321 (0.348)
Pseudo R <sup>2</sup>	0.179	0.164	0.167

The result of 100% stock payment is summarized in Table 8. From Table 8, we find that the analysts' recommendations of strong buy have significant positive impact on the decisions of stock payment in windows of 30 and 60 days. This result is consistent with the argument in Table 7 that strong buy recommendations may drive stock price up and acquirers may take advantage of overvalued equity in M&As. The strong sell recommendations in windows of 60 and 90 days are significantly positive and this is inconsistent with the previous expectation. One possible reason is that offering stock provides an opportunity for the shareholders of the target firms to become shareholders in the combined entity. This can align the interests of both sets of shareholders and may be seen as a positive aspect if the acquiring firm's long-term growth prospects are considered favorable. Therefore, the negative recommendations provide an opportunity for target shareholders to participate in acquirers future growth.

Finally, we test the information content of analysts' recommendations concerning acquirers' long-term market performance following M&A transactions. The regression results for the three-year buy-and-hold abnormal returns (BHARs) across different windows are summarized in Table 9. From Table 9, we find that the buy recommendations significantly negatively impact acquirers' BHARs. This result implies that analysts' recommendations are not consistent with acquirers' future long-term performance. One potential reason for this discrepancy is that analysts may base their recommendations on short-term news or forecasts, which may not accurately capture the long-term synergies and implications of M&A transactions. Additionally, if the agency problem of overvalued equity is severe in acquiring firms that use 100% stock payments, their long-term performance may be worse than those that use cash or mixed payments.

Regarding the impact of payment methods, the empirical results are consistent with existing evidence. From Table 9, we find that acquiring firms that use cash payments perform significantly better than other acquirers in the 30-day, 60-day, and 90-day windows. In contrast, the use of 100% stock payments has a significantly negative impact on acquirers' BHARs in the 90-day window.

These findings highlight the importance of considering the information content and potential biases of analysts' recommendations when evaluating the long-term implications of M&A transactions. While analysts' recommendations may reflect short-term market sentiment or firm-specific factors, they appear to be less informative regarding the long-term performance implications of M&A activities. This disconnect underscores the need for a more comprehensive and forward-looking approach in assessing the potential synergies and value creation opportunities associated with M&A transactions.

Furthermore, the observed relationship between payment methods and long-term performance aligns with existing literature. Acquirers that employ cash payments tend to outperform those that use stock payments, potentially due to the signaling effect of cash payments and the mitigation of agency problems associated with overvalued equity. These findings reinforce the importance of considering payment methods as a significant factor influencing acquirers' long-term performance following M&A transactions.

Overall, these results contribute to our understanding of the interplay between analysts' recommendations, payment methods, and long-term performance in the context of M&A activities. By identifying the potential limitations of analysts' recommendations and the implications of payment method choices, this study provides valuable insights for investors, corporate decision-makers, and regulatory bodies in evaluating the long-term consequences of M&A transactions.

**Table 9. The regression of BHAR**

The dependent variable is three-year buy and hold abnormal returns (BHARs) and the key independent variables are analysts' recommendation (Strong buy, Buy, Hold, Sell, and Strong sell). In addition, we also control the variables that could affect the long-term performance after M&As, which are firm size (Size), book-to-market ratio (BM), return on assets (ROA), dividend payout ratio (DPR), liquidity ratio (Liquid), debt ratio (DR), three-month abnormal return before announcement date (Runup) and the dummy of horizontal M&As (Horizon). Moreover, we control the method of payment:  $D^{\text{cash}}$  and  $D^{\text{stock}}$  and annual and industrial dummies.  $D^{\text{cash}}$  is equal to 1 when the acquirer uses 100% cash payment in the M&A and 0 otherwise.  $D^{\text{stock}}$  is equal to 1 when the acquirer uses 100% stock payment in the M&A and 0 otherwise.

VARIABLES	30 days	60 days	90 days
Strong buy	-0.026 (0.463)	-0.039 (0.244)	-0.022 (0.511)
Buy	-0.079*** (0.005)	-0.059** (0.036)	-0.062** (0.028)
Hold	-0.007 (0.773)	0.002 (0.916)	0.010 (0.626)
Sell	0.100 (0.392)	0.074 (0.517)	0.085 (0.450)
Strong sell	0.060 (0.460)	0.046 (0.565)	0.026 (0.740)
Size	0.613*** (0.006)	0.497** (0.013)	0.391** (0.040)
BM	0.129 (0.364)	0.114 (0.373)	0.080 (0.504)
ROA	0.256 (0.531)	0.275 (0.476)	0.324 (0.407)
DPR	0.061 (0.646)	-0.010 (0.767)	-0.015 (0.640)
Liquid	1.484*** (<0.001)	1.025*** (0.008)	0.751** (0.044)
DR	0.284 (0.200)	0.248 (0.205)	0.307* (0.089)
Runup	-0.343 (0.133)	-0.416* (0.057)	-0.485** (0.019)
Horizon	-0.088 (0.246)	-0.086 (0.193)	-0.061 (0.327)
$D^{\text{cash}}$	0.157* (0.095)	0.162** (0.042)	0.152** (0.045)
$D^{\text{stock}}$	-0.036 (0.777)	-0.140 (0.227)	-0.189* (0.081)
Constant	-1.823*** (0.001)	-1.506*** (0.002)	-1.291*** (0.004)
Adjusted R <sup>2</sup>	0.091	0.077	0.081

## 5. Conclusions

This study examines the role of analysts' recommendations in mergers and acquisitions (M&As), focusing on their impact on payment methods and acquirers' long-term performance. The findings contribute to understanding the information content and implications of analysts' recommendations in the M&A context.



First, we find that acquirers with strong buy or buy recommendations are more likely to use 100% stock payment, consistent with the overvaluation hypothesis. Conversely, acquirers with strong sell or sell recommendations tend to prefer cash payment, reflecting a reluctance to use undervalued equity. This evidence supports the first research hypothesis that analysts' recommendations influence the choice of payment method in M&A transactions.

Second, our results reveal no significant difference in analysts' recommendations between horizontal and diversifying M&As. While diversified deals receive slightly more buy recommendations on average, the differences are not statistically significant. Thus, we fail to find supportive evidence for the second research hypothesis, which posits that analysts' recommendations differ based on the deal's strategic focus (i.e., horizontal vs. diversifying).

Third, we document that acquirers with higher recommendation scores exhibit better long-term market performance, as measured by buy-and-hold abnormal returns (BHARs) over two and three years after the deal. Interestingly, this finding suggests that analysts' recommendations before M&A announcements do not fully incorporate the deal's potential impact on long-term performance. Instead, analysts' recommendations may be driven by short-term information or news, rather than a comprehensive assessment of the deal's strategic rationale and long-term value creation potential.

Multivariate analyses corroborate the significant negative impact of strong buy recommendations on cash payment and the positive impact on stock payment, reinforcing the overvaluation hypothesis. Furthermore, we find that acquirers with buy recommendations experience significantly lower three-year BHARs, highlighting the disconnect between analysts' recommendations and long-term performance.

Collectively, these findings have important implications for understanding the role of analysts in M&A transactions. While analysts' recommendations influence the choice of payment method, they do not appear to reflect the long-term strategic implications of M&As fully. This disconnect may arise from analysts' focus on short-term information or news, rather than a comprehensive evaluation of the deal's long-term value creation potential.

Our study contributes to the literature by shedding light on the information content and limitations of analysts' recommendations in the M&A context. It also raises questions about the potential agency problems associated with overvalued equity and their impact on long-term performance. Future research could further explore the underlying factors driving analysts' recommendations and their implications for various stakeholders in M&A transactions.

## Reference

1. Brown, D.T. and M.D. Ryngaert, *The mode of acquisition in takeovers: Taxes and asymmetric information*. The Journal of Finance, 1991. **46**(2): p. 653-669.
2. Litov, L.P., P. Moreton, and T.R. Zenger, *Corporate strategy, analyst coverage, and the uniqueness paradox*. Management Science, 2012. **58**(10): p. 1797-1815.
3. Becher, D.A., J.B. Cohn, and J.L. Juergens, *Do stock analysts influence merger completion? An examination of postmerger announcement recommendations*. Management Science, 2015. **61**(10): p. 2430-2448.
4. Tehranian, H., M.X. Zhao, and J.L. Zhu, *Can Analysts Analyze Mergers?* Management Science, 2014. **60**(4): p. 959-979.
5. Zuckerman, E.W., *Focusing the corporate product: Securities analysts and de-diversification*. Administrative Science Quarterly, 2000. **45**(3): p. 591-619.
6. Zuckerman, E.W., *The categorical imperative: Securities analysts and the illegitimacy discount*. American Journal of Sociology, 1999. **104**(5): p. 1398-1438.
7. Ahn, M., et al., *The role of the business press in the pricing of analysts' recommendation revisions*. Review of Accounting Studies, 2019. **24**(1): p. 341-392.
8. Mikhail, M.B., B.R. Walther, and R.H. Willis, *When security analysts talk, who listens?* The Accounting Review, 2007. **82**(5): p. 1227-1253.
9. Womack, K.L., *Do brokerage analysts' recommendations have investment value?* Journal of Finance, 1996. **51**(1): p. 137-167.
10. Feldman, E.R., *Corporate spinoffs and analysts' coverage decisions: The implications for diversified firms*. Strategic Management Journal, 2016. **37**(7): p. 1196-1219.
11. Nicolai, A.T., A.C. Schulz, and T.W. Thomas, *What Wall Street Wants - Exploring the Role of Security Analysts in the Evolution and Spread of Management Concepts*. Journal of Management Studies, 2010. **47**(1): p. 162-189.
12. Fogarty, T.J. and R.K. Rogers, *Financial analysts' reports: an extended institutional theory evaluation*. Accounting Organizations and Society, 2005. **30**(4): p. 331-356.
13. Groysberg, B. and L.E. Lee, *The effect of colleague quality on top performance: the case of security analysts*. Journal of Organizational Behavior, 2008. **29**(8): p. 1123-1144.
14. Michaely, R. and K.L. Womack, *Conflict of interest and the credibility of underwriter analyst recommendations*. Review of Financial Studies, 1999. **12**(4): p. 653-686.
15. Shen, R., Y. Tang, and G.L. Chen, *When the role fits: how firm status differentials affect corporate takeovers*. Strategic Management Journal, 2014. **35**(13): p. 2012-2030.
16. Uysal, V.B., S. Kedia, and V. Panchapagesan, *Geography and acquirer returns*.

- Journal of Financial Intermediation, 2008. **17**(2): p. 256-275.
17. Gompers, P.A. and J. Lerner, *The really long-run performance of initial public offerings: The pre-Nasdaq evidence*. Journal of Finance, 2003. **58**(4): p. 1355-1392.
  18. Schultz, P., *Pseudo market timing and the long-run underperformance of IPOs*. Journal of Finance, 2003. **58**(2): p. 483-517.
  19. Fama, E.F. and K.R. French, *Common risk factors in the returns on stocks and bonds*. Journal of Financial Economics, 1993. **33**(1): p. 3-56.
  20. Jensen, M.C., *Agency costs of overvalued equity*. Financial Management, 2005. **34**(1): p. 5-19.